Castilleja

The Newsletter of the Wyoming Native Plant Society

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The Lovages of Wyoming

by Walter Fertig

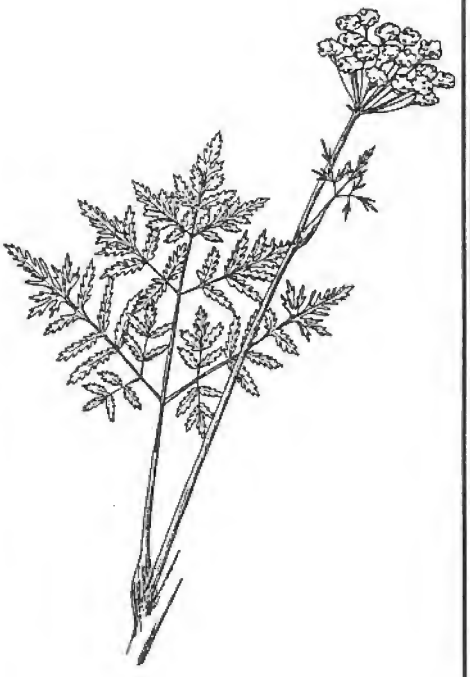
The Parsley family (Apiaceae or Umbelliferae) contains some of the most valuable cultivated herb species utilized by mankind. Many wild species in the family have also proven to be of great importance. Among the most valuable of these are the approximately one dozen species of lovage (genus *Ligusticum*) found in the western United States.

Lovages are aromatic herbs with fern-like foliage and stout, woody taproots. In certain species, these roots areused in the preparation of medicines for a variety ofailments including colds, upset stomachs, coughs, headaches, rheumatism, fevers, flu, and even snakebites. Native Americans and early Spanish settlers in the southwestern U.S. also utilized the hollow stems of the plant as a substitute for tobacco and as a celery-like seasoning.

The best known of the western species of lovage is osha, or Porter's lovage (*Ligusticum porteri*). Osha is primarily a southern Rocky Mountain species that reaches the northern edge of its range in the Medicine Bow Mountains of southeastern Wyoming. Here it typically occurs in moist subalpine or montane meadows. Like other members of its genus, *L. porteri* can be distinguished by its umbrella-like cluster of white flowers, squarish, narrowly ribbed fruits, and large root crowns covered by fibrous tufts of persistent leaf stalks. Unlike many other species of *Ligusticum*, osha has relatively wide leaflets and large fruits.

Wyoming contains three other species of lovage. Fern-leaved lovage (*L. filicinum*) is a common forest species in the state's northwestern mountains. It can be distinguished from osha by its extremely narrow leaflets. Canby's lovage, another native of the northwestern mountains, closely resembles osha but has smaller fruits. The uncommon Narrow-leaved lovage (*L. tenuifolium*) has slender leaf blades and enters the state only in the Sierra Madre of Carbon County.

The sale of osha root and other medicinal products derived from *Ligusticum* plants has developed into a cottage industry in the southwestern United States. The development of this industry is yet another example of the value of wild species to mankind and the importance of maintaining reservoirs of biological diversity in the natural world.



Above: Osha (*Ligusticum porteri*). Ill. by W. Fertig

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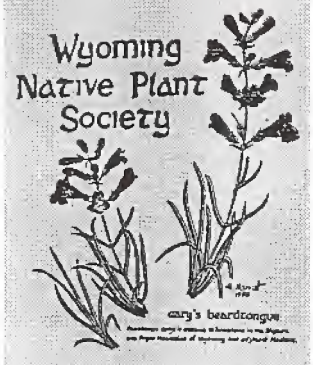
Layout/Design:.....Irene Thien

Contributors to this issue: John Baxter, Jane Dorn, Walter Fertig, Charmaine Refsdal, Kaye Thorne



WNPS NEWS

Scholarship Winner: At its March meeting, the WNPS Board awarded its annual scholarship of $300 to Charmaine Refsdal, a Master's Candidate from the University of Wyoming. Charmaine is beginning the second half of a 2-year general floristic inventory of southwestern Wyoming and adjacent Utah which includes the lower Green River Basin and the north slope of the Uinta Mountains. This area is relatively unexplored botanically, but is known to be the home of several uncommon state and regional endemics, including Opal phlox, Ownbey's thistle, and Ute lady's tresses. Charmaine is also a professional wildflower photographer and hopes to eventually write an illustrated field guide to the flora of southwestern Wyoming. We look forward to learning more about Charmaine's project in a future issue of Castilleja.

Other Board Business: In addition to voting on the scholarship award, the Board discussed invitations from two national native plant programs. The Board voted to join the Native Plant Conservation Initiative as a Cooperator. WNPS will join with 23 other non-federal cooperators and 8 federal agencies (including the Bureau of Land Management, National Park Service, US Forest Service, US Fish and Wildlife Service, and Soil Conservation Service) to promote more efficient and effective native plant conservation efforts at national and grass-roots levels. In the coming months the initiative will focus on developing priorities for conservation attention, education, and research needs. Joining this initiative does not require a financial investment by WNPS. The main benefit we will derive is improved collaboration with other federal and private groups interested in native plant conservation.

The Board also considered an invitation to join the proposed National Native Plant Coalition. The proposed purpose of this group is to represent member native plant societies, botanic gardens, arboreta, and garden clubs at a national level. This new organization would facilitate information exchange between member groups, promote education, and actively lobby decision-makers on national policy and regulatory issues. The WNPS Board decided not to participate in this organization at this time due to our lack of adequate financial resources (there is a fee to be a member organization) and because our interests are more state than nationally oriented. If individual members of WNPS are interested in learning more about this group, contact David Magney, National Native Plant Coalition, 44 Sycamore Lane, Ojai, CA 93023-2302.

Annual Meeting: The annual WNPS meeting and field trip is scheduled for the weekend of June 3-4 in the Red Desert Region of central Wyoming. The itinerary of the trip is still being planned at press time, but we expect to visit Steamboat Mountain, the Boar's Tusk, Continental Peak, and the Killpecker Dunes in search of spring flowers and Wyoming endemics such as *Lesquerella macrocarpa*. See the upcoming May issue of the newsletter for more details.

Elections: Nominees for Society Officers are: President: Barbara Amidon (Rock Springs), Vice President: Jennifer Whipple (Old Faithful), Secretary-Treasurer: Walt Fertig (Laramie), Board Member: Jean Daly (Big Horn). Diana Osuna (Kelly) is the carry-over Board Member. Additional write-in candidates are welcome. A ballot is included with the annual renewal notice in this issue.

Membership Renewal Time: A membership renewal form is enclosed in this issue. Members with a 94 or 95 on their mailing label should renew between now and the annual meeting to remain in good standing in the coming year. Members with a 96 on the label need not renew now, but are encouraged to submit a ballot.

New Members: Please welcome the following new members of WNPS: Larry Apple (Rawlins), Rosemary Benson (Bondurant), Cynthia Boyhan (Dubois), Jonathan Hughes (Laramie), Bill Smith (Laramie), Janet Smith (Laramie), Caryn Talbot Throop (Lander).

Treasurer's Report: Balance as of 11 March 1995: General Fund $507.18; 1994-95 Scholarship Fund $ 301.00. Total Funds: $808.18. WF

Attention WNPS Members: Your articles about Wyoming native plants or art work are welcome in the newsletter! Deadline for the May issue is 15 April 1995.

What's In A Name?

Purshia

The genus *Purshia* in the Rose family (Rosaceae) consists of two species restricted to the rangelands and mountains of western North America. Our single Wyoming species, *P. tridentata* (bitterbrush or antelope brush) is one of the most important browse species for deer, elk, pronghorn, and domestic livestock in the west. As its common name suggests, however, the acrid taste of the foliage does not appeal to those of the human species.

Bitterbrush is a medium-sized, multi-branched woody shrub with small, three-toothed, wedge-shaped leaves resembling those of big sagebrush (*Artemisia tridentata*). The plant's affinity with the rose family is revealed in late spring when it produces numerous, pale yellow rose-like flowers. By late June the petals are shed to reveal a single, leathery spindle-shaped fruit.

Purshia tridentata is often one of the most abundant shrub species on dry, open, south-facing mountain slopes with sandy or rocky soils. It typically is found on sites that are slightly more mesic than those dominated by sagebrush steppe vegetation.

The genus *Purshia* honors Frederick Pursh (1774-1820), a Philadelphia-trained botanist best known for authoring *Flora Americae Septentrionalis*, the first flora attempting to address the entire North American continent. In this book, Pursh described many of the new species collected by the Lewis and Clark expedition. Unfortunately, Pursh is also credited with describing many of the new species collected by his contemporaries before they had the chance to publish the work themselves, earning him an enduring reputation as a botanical charlatan. WF

Right: *Purshia tridentata* (bitterbrush). Ill. by A. E. Hoyle from Range Plant Handbook (US Department of Agriculture, 1937).

Botany Briefs

Botanical News from Wyoming and the Rocky Mountain Region

More New Plant Species for Wyoming: Field work by botanists active in the state of Wyoming is the primary means by which new state occurrence records are discovered. Sometimes, however, new records lurk in the dark recesses of the herbarium cabinet, waiting to be found by the careful taxonomist, or can be found in the library in newly published floras and monographs. The following "new" state records have emerged from literature sources and annotated herbarium specimens since the most recent edition of Dorn's "Vascular Plants of Wyoming" was published in 1992:

Senecio hydrophiloides (Sweet-marsh butterweed/Asteraceae): While examining the collections of the Grand Teton National Park Herbarium, Stuart Markow uncovered a specimen of **Senecio hydrophiloides** collected in the park by Wilhelm Solheim in 1957. *S. hydrophiloides* can be recognized by its glabrous stems, toothed, but unlobed basal leaves, reduced stem leaves, and yellow ray flowers. In Dorn's flora it will key to *S. hydrophilus*, from which it differs in typically having ray flowers and toothed leaves and in lacking hollow, glaucous stems. Sweet-marsh butterweed occurs in moist meadow areas and ranges from southern British Columbia to northern California and western Montana.

***Botrychium* species:** Four of Wyoming's new plant species belong to the notoriously difficult fern genus *Botrychium* (Ophioglossaceae). These new records are reported in Volume 2 of the recently published "Flora of North America". Unfortunately, the distribution of these species within Wyoming can only be inferred from the accompanying range maps as the western part of the state.

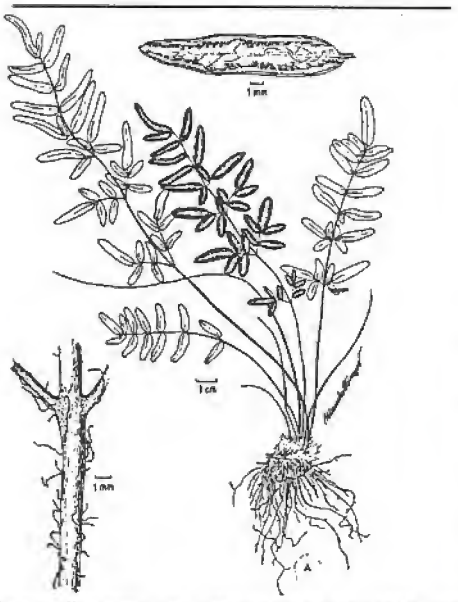
Botrychium crenulatum (Dainty moonwort): Dainty moonwort is one of 15 new species of *Botrychium* that have been formally described in North America since 1981. It is a low, somewhat fleshy herb with 2-5 pairs of non-overlapping, broadly fan-shaped leaflets (pinnae) making up the sterile portion of the leaf blade. This species is most likely to be confused with common moonwort (*B. lunaria*), which differs in having more numerous, overlapping pinnae. In neighboring states dainty moonwort occurs in marshy or wet forest habitats in valley bottoms.

Botrychium minganense (Mingan Island moonwort): This species resembles both *B. crenulatum* and *B. lunaria*, but differs in having narrowly fan or wedge-shaped leaflets. It is found in moist meadows and woods at low to mid-elevations across Canada and in the western United States.

Botrychium hesperium (Western moonwort): *B. hesperium* closely resembles triangle moonwort (*B. lanceolatum*). Both species have nearly sessile, triangular sterile leaf segments with linear to lance-shaped pinnae. Western moonwort, however, differs in having rounded rather than sharp-tipped leaflets. This recently described species grows in foothill meadows and grasslands from southern Alberta to northern Arizona.

Botrychium pinnatum (Northwestern moonwort): This species is unusual among Wyoming moonworts in having oblong to triangular sterile leaf blades with non-overlapping, round-tipped pinnately-veined pinnae. It closely resembles *B. boreale*, a species of Eurasia and Greenland which has been reported from western North America. B. pinnatum typically occurs along streambanks, in woods, and on grassy slopes.

Pellaea gastonyi (Gastony's cliff-brake/Adiantaceae): This recently described species is believed to be a hybrid between *P. atropurpurea* and *P. glabella*, with which it shares its range in the Black Hills of Wyoming and South Dakota. Despite its hybrid origin, *P. gastonyi* is capable of reproducing asexually. Gastony's cliff-brake can be distinguished from its parent species by its pubescent rachis of long, spreading hairs and shorter pinnae. The species is restricted to limestone cliffs and ledges.



Above: *Pellaea gastonyi*, a new species from the Black Hills. Ill. from Contr. Univ. of Michigan Herbarium 19: 38.

Selaginella watsonii (Watson's spike-moss/Selaginellaceae): Watson's spike-moss closely resembles compact spike-moss (*S. densa*) and was mistaken for it in Wyoming for 35 years (based on specimens at the Rocky Mountain Herbarium recently annotated by Ron Hartman). *S. watsonii* differs in having only one leaf size, instead of two sizes as in *S. densa*. The leaves of *S. watsonii* also differ in being narrower with shorter bristle-tips. It is known in Wyoming only from alpine rock slopes in the Beartooth Mountains.

Lepidium integrifolium (Entire-leaved peppergrass/Brassicaceae): This species was first reported for Wyoming by C. L. Hitchcock in his monograph of the genus *Lepidium* in 1936, but went undetected until 1994. *L. integrifolium* is most similar to *L. montanum* var. *alyssoides* from which it differs by its taller stems, broad, entire leaves, and minutely pubescent stems. The species is known only from southwestern Wyoming and northeastern Utah. WF

First Record of Chamomile in Wyoming: *Matricaria recutita*, an aromatic annual, was discovered along the banks of the Green River in Sweetwater County during field work associated with a floristic inventory of southwestern Wyoming in 1994. A member of the Asteraceae (sunflower family), *M. recutita* belongs to a genus of about 35 species native to the Northern Hemisphere. It is commonly known as chamomile or wild-chamomile, and is often referred to under the name *M. chamomila* in older floras and field guides. In Wyoming, it is most likely to be confused with *M. maritima*. Both species have conspicuous white rays and twice or more pinnately compound leaves. *M. recutita* differs, however, in being strongly aromatic and in lacking wing-like margins on the achenes. Species of dog-fennel (genus *Anthemis*) also superficially resemble *M. recutita*, but differ in having dry, scale-like chaff on the receptacle of the flower heads. Chamomile is a native of Eurasia found along roadsides and in waste places. CR

Wyoming Rare Plant Field Guide available: The long-awaited Wyoming Rare Plant Field Guide is finally available! This book includes line drawings, range maps, and color photographs of 91 of the rarest plant species in the state, including US Fish and Wildlife Service candidate and Forest Service Sensitive plant species. To find out how to obtain a copy of the guide, please contact Jeff Carroll, State Botanist, Bureau of Land Management Wyoming State Office, PO Box 1828, Cheyenne, WY 82003.

What Good Are Native Plants, Anyway?: Over 20 species in the mustard genus *Lesquerella* (bladderpods) have been studied for possible cultivation as an oil-seed crop in the United States. Oils in the seeds and fruits of *L. fendleri* (a native of arid regions of the southwestern United States) have been found to be rich in hydroxy fatty acids. Oils derived from these acids are similar in quality to those currently available only from imported castor oil. They can be used in the production of resins, waxes, plastics, lubricants, soaps, and cosmetics. Residual meal from the seeds also makes a protein-rich livestock feed supplement.

L. macrocarpa (large-fruited bladderpod), a Wyoming basin endemic and current candidate for listing as threatened or endangered, may also contain commercial-grade oils. This plant's adaptations to arid climates and barren shaley soils could also make it valuable in the development of dryland agriculture in Wyoming. WF

Above: *Lesquerella macrocarpa*, a rare Wyoming endemic known only from the Great Divide Basin in Sweetwater and Fremont counties and one disjunct population in the Green River Basin (Lincoln County). Ill.

Botanical Adventures on Bald Ridge

by Walter Fertig

How to get there

Bald Ridge is located approximately 23 miles northwest of Cody, Wyoming. From Cody, travel north on Wyoming state highway 120 about 16 miles to state highway 296 (Chief Joseph Scenic Highway). Travel west on highway 296 for approximately 11.2 miles to Forest Service Road 100. Continue north on this unimproved dirt two-track for about 6 miles. Bald Ridge itself is accessible only by foot (besides, you can't tell if a plant has strigillose or merely strigose pubescence from your car).

The Absaroka Mountains of northwestern Wyoming were formed during a period of active volcanism over 50 million years ago. Most of the peaks of the range have been carved by erosion of the soft andesitic deposits. Ridges on the far eastern edge of the Absarokas were not buried by these volcanic deposits and retain a cloak of calcareous substrates. Not surprisingly, these ridges harbor plant species and communities that differ from those elsewhere in the Absaroka Range.

Bald Ridge is one of these ridge systems on the east flank of the Absarokas. It is located east of the canyon of the Clarks Fork River and north of the Chief Joseph Scenic Highway (WY state highway 296), approximately 23 miles northwest of Cody. The Bald Ridge area has long been recognized for its outstanding examples of limber pine (*Pinus flexilis*) woodlands and bluebunch wheatgrass (*Elymus spicatus*) grasslands and as important habitat for a number of regionally rare plant and animal species. In recognition of these values, Shoshone National Forest proposed establishing Bald Ridge as a Research Natural Area (RNA) in 1986. (For more information on the RNA system, see "Botanizing in the Swift Creek Research Natural Area" in the December, 1994 *Castilleja*).

The crest of Bald Ridge divides the proposed RNA into two distinct vegetative regions. Most of the area east of the crest is covered by open woodlands of limber pine with patches of bluebunch wheatgrass-Idaho fescue (*Festuca idahoensis*) grasslands. The west side is dominated by thick forests of Engelmann spruce (*Picea engelmannii*) and Douglas-fir (*Pseudotsuga menziesii*). Steep cliffs and talus slopes on the extreme western edge of Bald Ridge support little plant cover.

Limber pine woodlands on the east slope of the ridge support a relatively depauperate understory flora, consisting mostly of Canada buffaloberry (*Shepherdia canadensis*) and common juniper (*Juniperus communis*). Buffaloberry is a low shrub characterized by opposite, egg-shaped green leaves. The leaf and stem surfaces of this species are covered by silvery or brown-colored star-like scales which, once observed with a 10x hand lens, are not soon forgotten.

Grasslands interspersed among the limber pine woodlands have a much richer assortment of species. One of the most unusual species present in these calcareous grasslands is Absaroka goldenweed (*Pyrrocoma carthamoides* ssp. *subsquarrosa* or *Haplopappus c.* var. *subsquarrosus*). This member of the sunflower family is found only along the eastern edge of the Absarokas in Park County, Wyoming and in the Beartooth Mountains of southern Montana. Absaroka goldenweed can be recognized by its single head of rayless, yellow flowers and saw-toothed leaves. It is currently under study for possible listing as a Threatened or Endangered species and is managed as a Sensitive plant by the US Forest Service.

Above: Absaroka goldenweed, a regional endemic of northwestern Wyoming and adjacent Montana found in calcareous grasslands on the southeast slopes of Bald Ridge. Ill. by W. Fertig

Conifer forests on the west side of Bald Ridge are dominated by Engelmann spruce on wetter, north-facing slopes and by Douglas-fir on drier sites. Moss species (*Hypnum revolutum* and *Tortula ruralis*) and shrubs such as Rocky Mountain maple (*Acer glabrum*), Canada buffaloberry, and Mountain ninebark (*Physocarpus monogynus*) form an important part of the understory of spruce woods. Occasional specimens of white spruce (*Picea glauca*), a species more typical of the boreal forests of Canada, have been observed on north slopes of the ridge.

The most unusual assemblage of species in the RNA can be found along the crest of Bald Ridge itself. A community of cushion plants occupies the shallow, rocky soils and patches of exposed limestone bedrock along the dry, wind-blasted ridgeline. Among the species adapted to these conditions are six regional endemics of northern Wyoming and adjacent parts of Montana, Idaho, and southern Alberta.

When in flower, many of these cushion species are among the most handsome of all the plants in the Rocky Mountains. Jones' columbine (*Aquilegia jonesii*) produces huge (relative to the size of the plant), short-spurred flowers described by Dr. Dee Strickler as "indescribably blue". Kelseya (*Kelseya uniflora*) and Howard forget-me-not (*Eritrichium howardii*) are equally dazzling in bloom, but are otherwise unremarkable when in a vegetative state. These species are best enjoyed in their native habitats and tend to do very poorly when removed to the home garden.

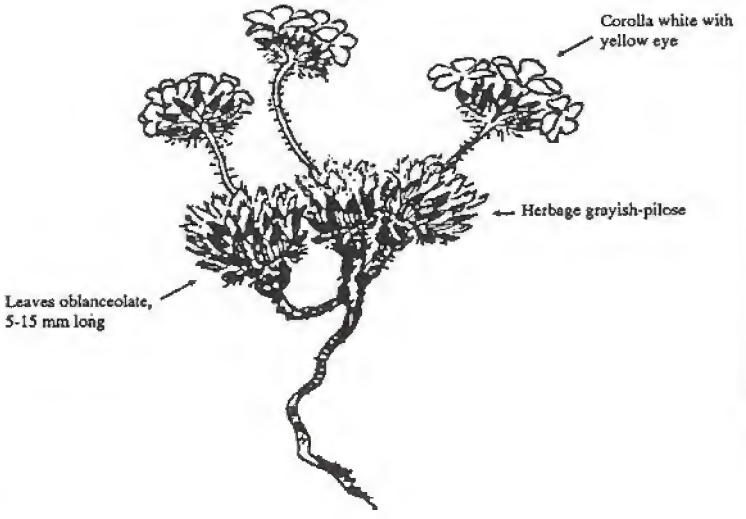
The sweet-flowered rock jasmine (*Androsace chamaejasme*) is found commonly in crevices of limestone bedrock and in shallow rocky soils along the crest of Bald Ridge. It produces an umbel-like head of aromatic creamy-white flowers above a rosette of hairy leaves. A yellow or orangish "eye" at the center of the corolla is reminiscent of the forget-me-nots, but this species is actually a close cousin of the primroses. Sweet-flowered rock jasmine is primarily an arctic species that extends southward in the Rocky Mountains to central Colorado.

The rarest species found in the cushion plant communities is Shoshonea (*Shoshonea pulvinata*). This mat-forming member of the parsley family is the only known species in its genus and has been known to science only since 1982 (yet another of the discoveries of the Absaroka's chief botanist, Erwin Evert). Shoshonea can be recognized by its bright green, once-pinnately compound leaves contrasted by compact, scabrous umbels of tiny yellow flowers. This species occurs only on stony, calcareous outcrops in the Absaroka and Owl Creek mountains of Wyoming and Montana's Pryor Mountains. It also is being considered for potential listing under the Endangered Species Act.

Although Bald Ridge is readily accessible from the Chief Joseph highway, it has remained largely unspoiled. Some old two-track roads are present in the grasslands along the southeast flank of the ridge and could serve as conduits for the invasion of exotic plants. Grazing also occurs in these grasslands, but has not been observed to have a negative impact on the forested and ridgeline communities.

Shoshone National Forest is currently in the process of studying other areas of high biodiversity value, like BaldRidge, for possible establishment as RNAs. Unfortunately, the RNA program has historically been a low priority in the Rocky Mountain region and a number of worthy sites remain unstudied and unprotected. To find out more about the RNA program and how you can be better informed about the selection and designation process, contact the ranger district office in your local area.

Below: Sweet-flowered rock jasmine (*Androsace chamaejasme*). Ill. by Kaye Thorne.



The ***Wyoming Native Plant Society***, established in 1981, is a non-profit organization dedicated to encouraging the appreciation and conservation of the native flora and plant communities of Wyoming. The Society promotes education and research on native plants of the state through its newsletter, field trips and annual student scholarship award. Membership is open to individuals, families, or organizations with an interest in Wyoming's flora. Members receive *Castilleja*, the Society's quarterly newsletter, and may take part in all of the Society's programs and projects, including the annual meeting/field trip held each summer. Dues are $5.00 annually.

To join the Wyoming Native Plant Society, return the membership form below to:

Wyoming Native Plant Society
1604 Grand Ave.
Laramie, WY 82070

Wyoming Native Plant Society

Name: _____

Address:

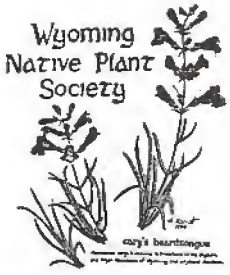
_____

_____

☐ $5.00 Regular membership

☐ $15.00 Scholarship Supporting Member

($10.00 goes to annual scholarship fund)



WYOMING NATIVE
PLANT SOCIETY
1604 Grand Avenue
Laramie, WY 82070

Biological Limericks

By John "Barney" Baxter

In recognition of Saint Patrick's Day, our own poet laureate, J. "B." Baxter offers his tribute to the form of verse known as the limerick, named after County Limerick in Ireland. This collection does not include the limericks he learned as a teenager in Burns, Wyoming, that were deemed unsuitable for a family publication such as Castilleja.

A botany prof in Milwaukee
Bought an army surplus walkie-talkie
Now his class he can teach
From a nice sandy beach
And his clothing no longer gets chalky.

Euell Gibbons, when he was a grampa
Took his grandchildren out hunting yampa
Cried the kids, "Grampa Euell
This ain't very cool,
We wish we were back home in Tampa!"

An eager mycologist was Lydia
She measured five thousand conidia
While resting her eyeballs
She drank twenty highballs
Which pickled her gleocystidia.